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PUC PROJECT NO. 52373

REVIEW OF WHOLESALE ELECTRIC MARKET DESIGN	**§**	**BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS**

LOWER COLORADO RIVER AUTHORITY'S MARKET DESIGN PROPOSAL

TO THE HONORABLE PUBLIC UTILITY COMMISSION OF TEXAS:

The Lower Colorado River Authority (LCRA) respectfully submits the attached proposal on reforming the Electric Reliability Council of Texas (ERCOT) wholesale market. As directed in Commission Staff's September 20, 2021 memo, an executive summary is provided at the end of this filing.

Respectfully submitted,

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LCRA Market Design Proposal

September 30, 2021

Long-Term Policy Objectives

1. Senate Bill 3 Requirements:

- Directs the PUC to evaluate whether additional services are needed for reliability in the ERCOT power region while providing adequate incentives for dispatchable generation
- Requires the PUC to ensure that ERCOT, at least annually, determines the ancillary or reliability services necessary to ensure appropriate reliability during extreme weather and times of low wind and solar production—and actually procures those services on a competitive basis

2. Governor Abbott's Directive in his July 6 Letter:

- Streamline incentives within the ERCOT market to foster the development and maintenance of adequate and reliable sources of power, like natural gas, coal, and nuclear power

Long-Term Market Objectives

1. Improve Grid Resiliency

- FERC definition: “The ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event.”
- Encompassing consequences to electricity system and other critical infrastructure from increasingly likely high-impact external events

2. Achieve a Higher Level of Reliability

- Implement market design changes to achieve the desired mix of resources
- Address volatility of intermittent resources and impacts to grid reliability

Path to Implementation

- **Achieving the desired outcomes will require PUC action to send appropriate market signals in the near term, as well as craft a comprehensive redesign to ensure the market's success in the long term, away from a crisis-based model**

- **Many of the proposals identified to date require significant system changes and will take years to implement**

- **The PUC should consider a multi-phased approach. LCRA proposes:**
  - Phase One: Design and implement new Ancillary Service Products, including Dispatchable Reliability Service and Firming Fuel Service
  - Phase Two: Make structural modifications to reflect the actual cost of serving firm load with firm generation

Market Solution Roadmap

Phase 1 Implementation | Phase 1 | Phase 2 Implementation | Phase 2

Phase 1 – Dispatchable Reliability Service & Firming Fuel Service

- Solutions constructed and proposed to consider flexible integration with ERCOT's existing systems and achieving goals of SB3
- Implementing new services with short implementation timelines provides regulatory certainty and additional market incentives on an accelerated timeline to incentivize dispatchable generation and increase reliability
- New market solutions with long implementation timelines will inevitably delay the construction of new dispatchable resources to coincide with the start of the new services

Phase 1 - Dispatchable Reliability Service

- Available to qualifying resources that can respond within 30 mins and provide uninterruptable power for 24 hours
- Financial penalties for failure to deliver or maintain availability
- Product available during scarcity conditions
- Annual review and adjust procurement of service to achieve reliability target
  - ➢ Procurement on an annual or seasonal basis
- Cost of market-based backup service can be directly assigned, in a manner consistent with cost-causation principles or paid for on a traditional basis

- **Benefits:** Provides investment incentives to dispatchable generation consistent with SB3

Phase 1 - Firming Fuel Service

- New product to compensate resources that ensure reliable fuel supply during extreme weather emergencies
- Independent consultant reviews proposals and determines the most cost-effective solution
- Competitive bid process from generator side

- **Options:**
  - Compression/pumping stations (new or additional)
  - Storage (natural gas, liquified natural gas, lakes)
  - Additional pipeline interconnections at plants and between pipelines
  - Dual fuel unit capabilities

- **Benefits:** Increases the resiliency & availability of resources during extreme weather conditions

Takeaways

- The Commission should provide clear guidance, including formal rule language, on new products to enhance reliability and provide market certainty
- LCRA believes the "1 in 10" standard needs to be the ultimate goal to ensure a sufficient level of resiliency against extreme weather events
- The proposed two-phase approach will give the Commission an immediate solution to incentivizing dispatchable generation to increase reliability, while longer term market design solutions are reviewed and implemented

Appendix

- A phase 2 market design proposal for consideration

Phase 2 – LCRA's Proposed Solution: Resource Adequacy Adder (RAA)

Overview: Adjust market prices to reflect the cost of serving firm load with firm generation

- Federal subsidies have disrupted market dynamics and increased volatility
  - The Resource Adequacy Adder works to reverse those impacts
- Compensates firm generation resources for the reliability they provide to the grid
- Costs can be applied and allocated through cost-causation principles

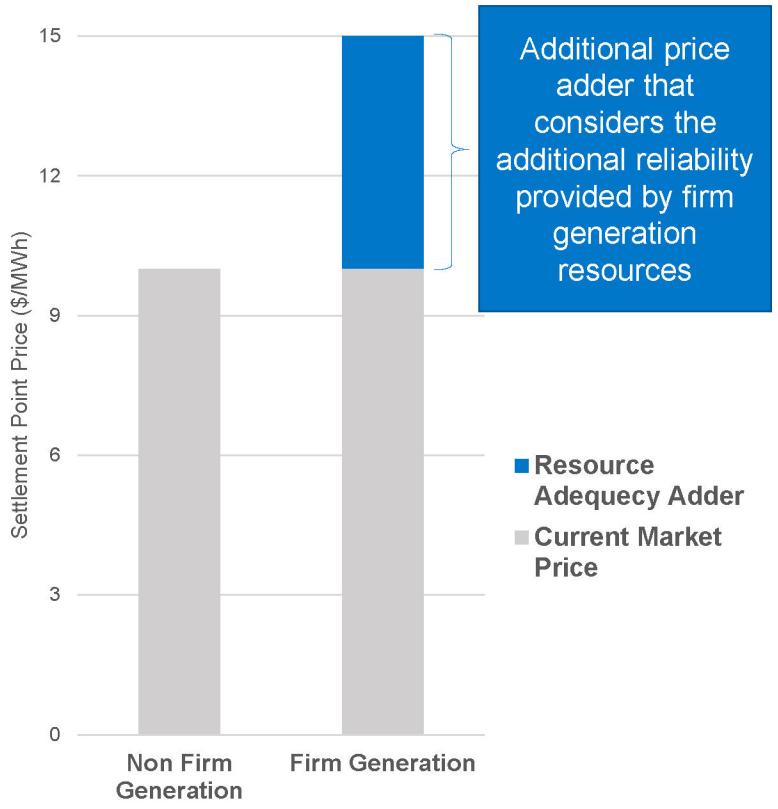
- **Benefits:** Compensating conventional generation for providing reliable backup service will provide incentives that meet acceptable reliability standards and encourage new firm dispatchable generation.
  - Direct market solution that addresses the impacts of variable non firm generation
  - Additional market incentives supports ~1250MW of Peakers annually

How do we Determine Amount of Firm Generation?

- **Many markets, including ERCOT, use effective load carrying capability (ELCC), the measurement of a resource's ability to generate when the grid is most likely to experience electricity shortfalls (i.e., firm generation)**
  - ➢Measures a resource's contribution towards grid reliability
- **ELCC Shares Concepts with Other Proposals**
  - ➢NRG's proposal similarly measures sufficiency/deficiency by determining ELCC for all resources
- **ERCOT would conduct an evaluation to determine the firm generation contribution by resource type**

Determine Compensation based on the Value a Resource Contributes to Grid Reliability

- **When a non-firm resource produces above its ELCC, the market does not provide a value to dispatchable resources for providing backup power**
- **The RAA is determined by evaluating each resource's ELCC and its firm generation contribution to resiliency in real time, creating another price**
  - The RAA is only paid to firm generation resources
  - Non-firm resources will continue to receive the existing market price based on the current market construct
- **Non-firm Resources can further contribute to this new product based on cost causation principles**
- **Non-firm Resources can be penalized for not meeting their firm generation capacity contribution**



Computing the Value of Firm Generation

- **The RAA is calculated based on the incremental cost of replacing the non firm generation with firm generation**
- **Non firm generation: Portion of the generation above the ELCC**
  - Firm renewable would be counted similarly to the existing CDR methodology
- **Post-real time settlement, the RAA would be allocated to the firm generation on a pro-rated basis**
- **There are no price impacts to the real time markets**
  - The incremental marginal increase is tracked in real time and allocated in settlements

EXECUTIVE SUMMARY

The current ERCOT wholesale market design is structured around providing low-cost electricity to consumers at the expense of reliability. The Commission should establish a new framework that promotes grid resiliency and addresses the directives from the Legislature and the Governor to create adequate incentives for dispatchable generation.

Given the time and resources that will be involved in implementing structural changes, LCRA recommends that the Commission endorse a two-phased approach to implement market design enhancements in ERCOT.

- Phase 1: Identify solutions that can be implemented in the near term that directly streamline incentives within the existing ERCOT market to foster the development and maintenance of adequate dispatchable generation resources.
- Phase 2: Develop and enact market solutions that address the underlying structural causes that have led to negative reliability outcomes, but which may require a longer implementation timeline.

In the initial phase, LCRA believes that achieving a more resilient wholesale market will require the Commission to direct ERCOT to adopt new ancillary service products. As LCRA has discussed in prior submissions and Commission work sessions, two ancillary service products that could meet those goals are a new Dispatchable Reliability Service and Firming Fuel Service. These products are designed to produce revenues sufficient to support investment in new dispatchable generation resources and maintain the current dispatchable generation fleet.

These new products can and should be implemented on an accelerated timeline, while the Commission evaluates and directs ERCOT to carry out potentially more complex solutions in the longer term. These near-term reliability solutions can be phased out or replaced entirely once the

Commission's reliability targets are met or more permanent solutions are in place. With any market reforms, LCRA recommends that the Commission articulate a reliability standard and evaluate the expected reliability outcomes that the chosen design changes are anticipated to produce. LCRA recommends a 1-in-10 loss of load expectation as an appropriate reliability standard.

Finally, LCRA recommends that any market design changes (including modifications to the scarcity pricing mechanism and the creation of any new ancillary service products) be codified in substantive rule language. Most of the implementation processes and design details can be handled at ERCOT, but Commission direction on these issues must be captured in clear, binding rule language to provide regulatory certainty to the ERCOT market.